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EXAMINER

KRAVETS, LEONID

ART UNIT PAPER NUMBER

2189

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,890

Applicant(s)

HARASHIMA, HAJIME

Examiner

Leonid Kravets

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/22/2003.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Drawings

1. Figures 10-13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 10 is objected to because of the following informalities: Since the claim chains are similar, examiner believes claim 10 to be in the mold of claim 5. Prior art will be applied based on the limitations of claim 5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear what an upper-rank unit is, as it was never described in detail in the specification. Examiner interprets the upper-rank unit to be a processor.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. Rejections have been made as interpreted by examiner. Claim 11 is especially difficult to understand. Please edit the claims for clarity.

According to the MPEP, A claim limitation which is considered indefinite cannot be disregarded. If a claim is subject to more than one interpretation, at least one of which would render the claim unpatentable over the prior art, the examiner should reject the claim as indefinite under 35 U.S.C. 112, second paragraph (see MPEP § 706.03(d)) and should reject the claim over the prior art based on the interpretation of the claim that renders the prior art applicable. *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984) (Claims on appeal were rejected on indefiniteness grounds only; the rejection was reversed and the case remanded to the examiner for

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consideration of pertinent prior art.). Compare *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970) (if no reasonably definite meaning can be ascribed to certain claim language, the claim is indefinite, not obvious) and *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962) (it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under 35 U.S.C. 103 on these assumptions).

Examiner applies the decision of *In re Steele* in not applying prior art to claim 11. It is unclear to the examiner the structure of the apparatus, especially the limitation "first storage means including data writing of which is instructed by an upper-rank unit and redundancy data and capable of, if data of a size equal to or smaller than a size of said redundancy data is destroyed, ensuring data writing from remaining data while repairing said data writing of which is instructed, in response to a command from said upper-rank unit". Examiner reserves the right to apply prior art in the future, if it is deemed appropriate to the edited claim.

Claim Rejections - 35 USC § 102

7. Claims 1-2, 4-5, 12-13 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kalman (US Patent 6,820,211).

As per claim 1, Kalman discloses a data writing apparatus for writing data into storage means (Col 1, Lines 63-66), comprising:

an upper-rank unit (Fig 1, Ref 12);

first storage means where data to be written has a redundancy structure (Fig 1, Ref 23, Col 1, Lines 14-16); and

a control unit which writes data in said first storage means in response to a command from said upper-rank unit (Fig 1, Ref 22) and includes

second storage means (Fig 2, Ref 108), and

logical disk [RAID is a logical disk] writing/reading means for writing in said second storage means data writing of which at an address in said first storage means is instructed by said upper-rank unit (Fig 3A, Ref 216, 218) and reporting completion of writing to said upper-rank unit [the wait of Kalman for the next data request (Fig 3A, Ref 208) after storing data from request on another storage medium (Fig 3A, Ref 218) is an indicator of completion], when a redundancy destruction occurs at said address (Fig 3A, Ref 204).

8. As per claim 2, Kalman discloses the data writing apparatus according to claim 1, wherein said control unit (Col 3, Lines 57-61) further comprises logical disk [RAID] monitoring means which verifies if said redundancy destruction at said address has been recovered (Fig 3A, Ref 220), and

when said logical disk monitoring means verifies that said redundancy destruction at said address has been recovered, said logical disk writing/reading means reads data written in said second storage means and writes said data at said address in said first storage means (Fig 3A, Ref 222).

9. As per claim 4, Kalman discloses the data writing apparatus according to claim 1, wherein said second storage means is non-volatile storage means or volatile storage means having an independent power supply (Col 3, Lines 42-49).

10. As per claim 5, Kalman discloses the data writing apparatus according to claim 1, wherein said second storage means retains data written by said control unit until said data is written in said first storage means [In order to update the drive, data must be stored until it is written in first storage means (Fig 3A, Ref 222)].

11. As per claim 12, Kalman discloses a method for writing data into storage means where data to be written has a redundancy structure (Col 1, Line 63 – Col 2, Line 1), comprising the steps of:

A) when a redundancy destruction occurs at an address in said first storage means where data to be written has a redundancy structure (Fig 3A, Ref 204), writing in said second storage means data writing of which at said address is instructed by an upper-rank unit (Fig 3a, Ref 216, 218); and

B) reporting completion of writing to said upper-rank unit [the wait of Kalman for the next data request (Fig 3A, Ref 208) after storing data from request on another storage medium (Fig 3A, Ref 218) is an indicator of completion].

12. As per claim 13, Kalman discloses the method according to claim 12, further comprising the steps of:

C) verifying if said redundancy destruction at said address has been recovered (Fig 3a, Ref 220);

D) when recovery of said redundancy destruction is verified, reading data written in said second storage means (Fig 3A, Ref 222); and

E) writing said data at said address in said first storage means (Fig 3A, Ref 222).

13. As per claim 18, Kalman discloses a computer program capable of running on a computer so that the computer performs said steps of claim 12 [a computer program running on a computer is inherent in controlling a controller performing the steps of claim 12].

Claim Rejections - 35 USC § 103

14. Claims 6-7, 9-10 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalman, and further in view of Kakuta (US Patent 5,600,783).

As per claim 6, Kalman discloses a data writing/reading apparatus for writing data into storage means (Col 1, Lines 63-66), comprising:

an upper-rank unit (Fig 1, Ref 12);

first storage means where data to be written has a redundancy structure (Fig 1, Ref 23, Col 1, Lines 14-16); and

a control unit which writes data in said first storage means in response to a command from said upper-rank unit (Fig 1, Ref 22) and includes

second storage means (Fig 2, Ref 108), and

logical disk [RAID is a logical disk] writing/reading means for writing in said second storage means data writing of which at an address in said first storage means is instructed by said upper-rank unit (Fig 3A, Ref 216, 218) and reporting completion of writing to said upper-rank unit [the wait of Kalman for the next data request (Fig 3A, Ref 208) after storing data from request on another storage medium (Fig 3A, Ref 218) is an indicator of completion], when a redundancy destruction occurs at said address (Fig 3A, Ref 204). Kalman does not disclose reading from said second storage means data for which a command to read from said address is given from said upper-rank unit when that data exists.

Kakuta discloses reading from said second storage means data for which a command to read from said address is given from said upper-rank unit when that data exists (Col 11, Lines 17-20).

As per claim 7, Kalman discloses the data writing apparatus according to claim 1, wherein said control unit (Col 3, Lines 57-61) further comprises logical disk [RAID] monitoring means which verifies if said redundancy destruction at said address has been recovered (Fig 3A, Ref 220), and

when said logical disk monitoring means verifies that said redundancy destruction at said address has been recovered, said logical disk writing/reading means reads data written in said second storage means and writes said data at said address in said first storage means (Fig 3A, Ref 222).

As per claim 9, Kalman discloses the data writing apparatus according to claim 1, wherein said second storage means is non-volatile storage means or volatile storage means having an independent power supply (Col 3, Lines 42-49).

As per claim 10, Kalman discloses the data writing apparatus according to claim 1, wherein said second storage means retains data written by said control unit until said data is written in said first storage means [In order to update the drive, data must be stored until it is written in first storage means (Fig 3A, Ref 222)].

As per claim 15, Kalman discloses a method for writing and reading data into and from storage means where data to be written has a redundancy structure (Col 1, Line 63 – Col 2, Line 1), comprising the steps of:

J) when a redundancy destruction occurs at an address in said first storage means, writing in said second storage means data writing of which at said address is instructed by an upper-rank unit (Fig 3a, Ref 216, 218);

K) reporting completion of writing to said upper-rank unit [the wait of Kalman for the next data request (Fig 3A, Ref 208) after storing data from request on another storage medium (Fig 3A, Ref 218) is an indicator of completion];

Kalman does not disclose the step of L) when there is data reading of which from said address is instructed by said upper-rank unit, reading said data from said second storage means. However, Kakuta discloses that when there is data reading of which from said address is instructed by said upper-rank unit, reading said data from said second storage means (Col 11, Lines 17-20).

As per claim 16, Kalman discloses the method according to claim 15, further comprising the steps of:

M) when recovery of said redundancy destruction is verified, reading data written in said second storage means and writing said data at said address in said first storage means (Fig 3A, Ref 222).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate reading data from the second storage device of Kakuta into the system of Kalman, since Kalman and Kakuta form the same

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field of endeavor, namely data requests in a faulty storage array and this would allow for faster access to newly written data (Col 11, Lines 20-21).

15. Claims 3, 8, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalman as applied to claims 1 6, 12 and 15 above, and further in view of applicant's description of prior art.

As per claim 3, Kalman discloses the data writing apparatus according to claim 2. Kalman does not disclose the apparatus wherein said logical disk monitoring means comprises:

The applicant's specification disclosure of conventional data writing apparatus discloses the management table updating means which checks a status of said first storage means and updates a management table (Page 2, lines 4-8);

Further the applicant's disclosure of conventional data writing apparatus discloses a timer which informs said management table updating means of passage of a given time when elapsed (Page 2, lines 1-3); and

The applicant's specification disclosure of conventional data writing apparatus does not disclose write-enableness reporting means which reports recovery of said redundancy destruction at said address to said logical disk writing/reading means when said management table indicates said recovery of said redundancy destruction.

Kalman discloses write-enableness reporting means which reports recovery of said redundancy destruction at said address to said logical disk writing/reading means (Fig3A, Ref 220) when said management table indicates said recovery of said redundancy destruction [since applicant discloses management table checking status of first storage means, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the result of this check to decide when the recovery of redundancy destruction is complete].

As per claim 8, please see rejection of claim 3 above. Claim 8 is rejected for similar reasons.

As per claim 14, Kalman discloses the method according to claim 12, Kalman does not disclose the method further comprising the steps of:

- F) checking a status of said first storage means when a given time elapses;
- G) updating a management table;

The applicant's description of a conventional data writing apparatus discloses the steps of:

F) checking a status of said first storage means when a given time elapses (Page 2, Lines 3-8);

G) updating a management table [it is obvious that the management table updating means updates a management table];

Kalman further discloses the steps of:

H) reading data written in said second storage means when said management table indicates recovery of said redundancy destruction [since applicant discloses management table checking status of first storage means, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the result of this check to decide when the recovery of redundancy destruction is complete (Col 4, Lines 47-52)]; and

I) writing said data at said address in said first storage means (Col 4, Lines 47-52).

As per claim 17, please see rejection of claim 14 above. Claim 17 is rejected for similar reasons.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the management table updating means and timer of applicant's disclosure of prior art into the system of Kalman, since Kalman and applicant form the same field of endeavor, namely data accesses in disc array and applicant describes a conventional data writing apparatus, thus the system of Kalman would have had such a structure for consistent updates of management table.

Conclusion

16. The following is text cited from 37 CFR 1.111(c): In amending in reply to a rejection of claims in an application or patent under reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. The applicant or patent owner must also show how the amendments avoid such references or objections.

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Kravets whose telephone number is 571-272-2706. The examiner can normally be reached on M-F, 8-4:30.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached at 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

L.K.
Leonid Kravets
Patent Examiner
Art Unit 2189

October 6, 2005



BEHZAD JAMES PEIKARI
PRIMARY EXAMINER